

S/N 10/682,284

Atty Dkt No. GP-303267 (GM-0412PUS)

### Remarks

Claims 1-19 are pending. Claims 1-6, 8-11 and 13-18 are rejected under 35 U.S.C. § 102(b). Claims 7, 12, and 19 are rejected under 35 U.S.C. § 103(a). These claims are believed to be patentable in their original form and reconsideration is respectfully requested in light of the following response to the Office Action.

#### Rejections under 35 U.S.C. §102(b)

The Examiner rejects claims 1-6, 8-11 and 13-18 under 35 U.S.C. § 102(b) as being anticipated by Gussman (U.S. Pat. No. 1,612,372).

For a rejection to be proper under 35 U.S.C. § 102(b), every element and limitation found in the rejected claim must be found in the 102(b) reference. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053, (Fed Cir. 1987). See MPEP §2131.

The Examiner states that Gussman's Figure "shows one nozzle 16 per cylinder" and that "the spray of oil from each nozzle is seen to be so wide as to impinge upon the piston, piston pin, and cylinder walls all at the same time." Examiner relies upon the drawing of the Gussman patent for the rejection under Section 102(b). Drawings and pictures may anticipate claims, but they must clearly show the structure that is claimed. *In re Mraz*, 455 F.2d 1069, 173 USPQ 25 (CCPA 1972). The drawings must be evaluated for what they reasonably disclose to one of ordinary skill in the art. *In re Aslanian*, 590 F.2d 911, 200 USPQ 500 (CCPA 1979). See MPEP §2125. Applicant respectfully submits that the rejection of claim 1 is improper because the claim recites limitations not found in Gussman. More specifically, claim 1 recites "a squirter connected to the engine block and having a nozzle aimed to spray lubricant against a wall of the cylinder bore slightly below the piston skirt when the piston is at top dead center." Gussman does not teach an oil squirter "connected to the engine block" as in claim 1. To the contrary, Gussman's nozzles 16 are on a manifold 15 "connected with" a delivery pipe 14 (see col. 2, lines 66-71).

Moreover, Gussman does not teach "a squirter -- aimed to spray lubricant against a wall of the cylinder bore slightly below the piston skirt when the piston is at top dead center" as recited in claim 1. On the contrary, the Gussman nozzles 16 are "aimed" at nothing. The

SN 10/682,284

Atty Dkt No. GP-303267 (GM-0412PUS)

lubricant is aimlessly "squirted into the cylinders" (col. 2, lines 70-71). One of ordinary skill in the art could not reasonably derive from the drawings in Gussman that the optimal oil squirter targeting is "against a wall of the cylinder bore slightly below the piston skirt when the piston is at top dead center" as recited in claim 1 of the Application. Neither Gussman's written description nor his claims nor his drawing show with sufficient specificity the specific squirter targeting location that claim 1 recites, i.e., "a nozzle aimed to spray lubricant against a wall of a cylinder bore slightly below the piston skirt when the piston is at top dead center." Nowhere in Gussman does it state the benefits of optimal oil squirter targeting such as "significant piston noise reduction upon cold starts, minimum wrist pin noise through improved lubrication of affected joints" (as in the current Specification paragraph [0029], lines 12-13), this is further evidence that Gussman does not teach or suggest the optimal squirter targeting that claim 1 recites. The drawing in Gussman is not sufficiently enabling to put the public in possession of the claimed invention and cannot be held to anticipate claim 1.

Accordingly, Applicant submits that claim 1 is not anticipated by Gussman under Section 102(b) and is therefore allowable. Claims 2-8, which depend from claim 1, are allowable for at least the same reasons that claim 1 is allowable.

Furthermore, claim 2 recites "said nozzle is aimed to spray a continuous stream of lubricant across the cylinder bore." Gussman does not discuss specific nozzle targeting and the squirter nozzle 16 in Gussman is seen spraying oil upward and parallel to the cylinder bore and not "across" the cylinder bore as in claim 2. As taught by Applicant:

With block-mounted squirters targeted straight up the center of the piston, the oil is disbursed but virtually all of it is contained within the piston's cavity. Essentially none of the oil is splashed onto the bore walls.

(paragraph [0008], lines 23-26)

Applicant submits that claim 2 is not anticipated by Gussman for this reason also.

Furthermore, claim 3 recites "said nozzle is aimed to spray the lubricant on the minor side." Gussman does not discuss specific squirter nozzle targeting, and the squirter nozzle 16 in Gussman is shown spraying oil upward and parallel to the cylinder bore. Since only the

S/N 10/682,284

Atty Dkt No. GP-303267 (GM-0412PUS)

longitudinal plane of the engine is shown and no engine rotational direction is stated in the Gussman patent, Gussman does not teach with sufficient specificity that the lubricant is sprayed "on the minor side" of the cylinder. Applicant submits that claim 3 is not anticipated by Gussman for this reason also.

Furthermore, claim 4 recites "said nozzle is aimed to spray lubricant between approximately 3 and 8 mm below the piston skirt when the piston is at top dead center." Gussman does not discuss specific squirter nozzle targeting, and the squirter nozzle 16 in Gussman is seen spraying oil upward and parallel to the cylinder bore. Here, again, it is impossible to determine with sufficient specificity from Gussman's teaching that nozzle 16 is aimed to spray lubricant "between approximately 3 and 8 millimeters below the piston skirt..." Applicant submits that claim 4 is not anticipated by Gussman for this reason also..

Furthermore, claim 5 recites "said nozzle is aimed to spray on the wrist pin in the middle portion of each piston stroke." Gussman does not discuss specific squirter nozzle targeting. Here, again, it is impossible to determine with sufficient specificity that nozzle 16 is "aimed to spray on the wrist pin *in the middle portion* of each piston stroke." (emphasis added) Applicant submits that claim 5 is not anticipated by Gussman for this reason also.

Furthermore, claim 6 recites "said nozzle is aimed to spray on an underside of the dome when the piston is at bottom dead center." Gussman does not discuss specific squirter nozzle targeting. Here, again, it is impossible to determine with sufficient specificity that nozzle 16 is "*aimed to spray* the lubricant on an underside of the dome when the piston is *at bottom dead center*." (emphasis added) Applicant submits that claim 6 is not anticipated by Gussman for this reason also.

The internal combustion engine of claim 9 includes elements and limitations not taught in Gussman. Claim 9 recites "a squirter connected to the engine block and having a nozzle aimed to spray... lubricant against the wall of the cylinder bore slightly below the piston skirt". Gussman does not teach that the oil squirters are "connected to the engine block" as in claim 9. To the contrary, Gussman's nozzles 16 are on a manifold 15 "connected with" a delivery pipe 14 (see col. 2, lines 66-71). Moreover, Gussman does not teach "a squirter... aimed to spray a steady stream of lubricant at an angle across the cylinder bore to spray the lubricant against the wall of the cylinder bore slightly below the piston skirt when the piston is at the top dead center position", as recited in claim 9. On the contrary, the Gussman nozzles 16 are

S/N 10/682,284

Atty Dkt No. GP-303267 (GM-0412PUS)

"aimed" at nothing. The lubricant is "squirted into the cylinders" (col. 2, lines 70-71). One of ordinary skill in the art could not reasonably derive from the drawings in Gussman that the optimal oil squirter targeting is "against the wall of the cylinder bore slightly below the piston skirt when the piston is at the top dead center position", as recited in claim 9 of the Application. Furthermore, claim 9 recites "a nozzle aimed to spray a steady stream of lubricant at an angle across the cylinder bore". Gussman does not discuss specific nozzle targeting and the squirter nozzle 16 in Gussman is seen spraying oil upward and parallel to the cylinder bore and not "across" the cylinder bore as in claim 9. In addition, claim 9 recites "a nozzle aimed... to spray the lubricant on the wrist pin when the piston is between top dead center and bottom dead center positions". Gussman does not discuss specific squirter nozzle targeting. Here, again, it is impossible to determine with sufficient specificity that nozzle 16 is "*aimed... to spray the lubricant on the wrist pin when the piston is between top dead center and bottom dead center positions*" (emphasis added). Furthermore, claim 9 recites "a nozzle aimed... to spray the lubricant on an underside of the dome when the piston is at the bottom dead center position." Gussman does not discuss specific squirter nozzle targeting. Here, again, it is impossible to determine with sufficient specificity that nozzle 16 is "*aimed... to spray the lubricant on an underside of the dome when the piston is at the bottom dead center position.*" (emphasis added). Neither Gussman's written description nor his claims nor his drawing show with sufficient specificity the specific squirter targeting location that claim 9 recites.

Accordingly, Applicant submits that claim 9 is not anticipated by Gussman and is therefore allowable. Claims 10, 11, and 13, which depend from claim 9, are allowable for at least the same reasons that claim 9 is allowable.

Furthermore, claim 10 recites that "said nozzle is aimed to spray the lubricant on the minor side." Gussman does not discuss specific squirter nozzle targeting, and the squirter nozzle 16 in Gussman is shown spraying oil upward and parallel to the cylinder bore. Since only the longitudinal plane of the engine is shown and no engine rotational direction is stated in the Gussman patent, Gussman does not teach with sufficient specificity that the lubricant is sprayed "on the minor side" of the cylinder. For this reason also, claim 10 is allowable.

Furthermore, claim 11 recites that "said nozzle is aimed to spray the lubricant between approximately 3 and 8 millimeters below the piston skirt when the piston is at top dead center." Gussman does not discuss specific squirter nozzle targeting, and the squirter nozzle 16

S/N 10/682,284

Atty Dkt No. GP-303267 (GM-0412PUS)

in Gussman is seen spraying oil upward and parallel to the cylinder bore. Here, again, it is impossible to determine with sufficient specificity from Gussman's teaching that nozzle 16 is aimed to spray lubricant "between approximately 3 and 8 millimeters below the piston skirt when the piston is at top dead center". For this reason also, claim 11 is allowable.

The method of lubricating a piston in claim 14 includes elements and limitations not taught in Gussman. Gussman does not teach "spraying lubricant across the cylinder bore against a wall of the cylinder bore slightly below the skirt of the piston when the piston is at the top dead center position" as recited in claim 14. On the contrary, the Gussman nozzles 16 are "aimed" at nothing. The lubricant is "squirted into the cylinders" (col. 2, lines 70-71). One of ordinary skill in the art could not reasonably derive from the drawing in Gussman that the optimal oil squirter targeting is "against the wall of the cylinder bore slightly below the skirt of the piston when the piston is at the top dead center position." as recited in Claim 14 of the application.

In addition, claim 14 recites "spraying lubricant onto a wrist pin... when the piston is between the top dead center and bottom dead center positions". Gussman does not discuss specific squirter nozzle targeting. Here, again, it is impossible to determine with sufficient specificity that the proper method of operating nozzle 16 is by "spraying lubricant onto a wrist pin... when the piston is between the top dead center and bottom dead center positions."

Furthermore, claim 14 recites "spraying lubricant onto an underside of the dome when the piston is at the bottom dead center position." Gussman does not discuss specific squirter nozzle targeting. Again, it is impossible to determine with sufficient specificity that the proper method of operating nozzle 16 is by "spraying the lubricant onto an underside of the dome when the piston is at the bottom dead center position." Neither Gussman's written description nor his claims nor his drawing teach with sufficient specificity the method of lubricating a piston that claim 14 recites.

Accordingly, Applicant submits that claim 14 is not anticipated by Gussman and is therefore allowable. Claims 15-18 which depend from claim 14 are allowable for at least the same reasons that claim 14 is allowable.

Furthermore, claim 17 recites "said spraying is performed by a squirter having a nozzle aimed to spray the lubricant across the cylinder bore toward the minor side." Gussman does not discuss specific nozzle targeting and the squirter nozzle 16 in Gussman is seen spraying

S/N 10/682,284

Atty Dkt No. GP-303267 (GM-0412PUS)

oil upward and parallel to the cylinder bore and not "across" the cylinder bore as in claim 17. In addition, claim 17 recites "a nozzle aimed to spray the lubricant across the cylinder bore toward the minor side." Gussman does not discuss specific squirter nozzle targeting, and the squirter nozzle 16 in Gussman is shown spraying oil upward and parallel to the cylinder bore. Since only the longitudinal plane of the engine is shown and no engine rotational direction is stated in the Gussman patent, Gussman does not teach with sufficient specificity that the lubricant is sprayed "toward the minor side" of the cylinder. For this reason also, claim 17 is allowable.

Furthermore, claim 18 recites the method "wherein said lubricant is sprayed between approximately 3 and 8 millimeters below the piston skirt when the piston is at top dead center." Gussman does not discuss specific squirter nozzle targeting, and the squirter nozzle 16 in Gussman is seen spraying oil upward and parallel to the cylinder bore. Here, again, it is impossible to determine with sufficient specificity from Gussman's teaching that nozzle 16 is aimed to spray lubricant "between approximately 3 and 8 millimeters below the piston skirt when the piston is at top dead center." For this reason also, claim 18 is allowable.

#### Rejections under 35 U.S.C. §103(a)

The Examiner rejects claims 7, 12, and 19 as obvious under 35 U.S.C. §103(a) as being unpatentable over Gussman as applied to claims 1, 9, and 14, and further in view of "prior art". The prior art relied upon by the Examiner is stated to be disclosed in the present Specification (page 3, lines 5-8).

Applicant submits that there is no suggestion or motivation provided to combine the teachings of Gussman with the stated prior art. One of ordinary skill in the art would not so combine due to differences in functionality between the claimed invention and Gussman as modified by the stated "prior art". The purpose for the inclusion of check valves in the squirter nozzles is stated in the present Specification at paragraph [0025], lines 24-28 as:

A check ball 44 is positioned in a channel 46 of the body 40, and is spring-biased by the spring 48 so that the squirter only squirts oil when at least a predetermined minimum pressure is available in the engine, such as 23-30 psi, so that needed pressure is not diverted from other areas of the engine when needed.

S/N 10/682,284

Atty Dkt No. GP-303267 (GM-0412PUS)

As claimed in claims 7, 12, and 19, "a spring-loaded ball valve (is) to assure that at least a minimum lubricant pressure is available prior to squirting the lubricant." Gussman does not mention a need to maintain gallery pressure. Gussman, by not using the claimed block mounted squirter design, isolates the interaction between squirter nozzles and the engine's hydraulic lubrication circuit, thereby, negating the need for check valves to maintain gallery pressure. If a proposed modification would render the prior art invention being modified as unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). The combination of the two references renders the Gussman invention in its modified form unsatisfactory for its intended purpose. The inclusion of a spring-loaded ball valve in Gussman would require a larger oil pump to overcome the relief pressure of the valve and would cause the squirters in Gussman to stop flowing prematurely, both of which are undesirable effects.

Furthermore, If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Here, the proposed modification will change the principle of operation of Gussman. Gussman uses a clutch system 29 and 30 to disengage the squirter system at high engine speeds (see col., 2, lines 104-110), counter to what the Applicant teaches in the current Application. Applicant appreciates the need to maintain the oil spray at high engine speeds to benefit from the piston cooling effect of the oil stream. The present Application teaches that a spring-loaded ball valve is used to maintain a minimum gallery pressure to ensure proper functioning of engine components that are connected to the engine's hydraulic lubrication circuit. Low gallery pressure manifests at very low engine speeds and high lubricant temperature. Thus, the Applicant's spring-loaded ball check valve prevents squirting lubricant through the nozzle at low engine speeds, but allows such at higher speeds. Gussman, with an isolated pump, would operate at low engine speeds, without detriment to engine components. One of ordinary skill in the art would realize that there is no reasonable expectation of success by combining check valves with Gussman, and to shut off the stream of lubricant via a check valve would neither be necessary nor beneficial with the Gussman design. Thus, it would not be obvious to combine a spring-loaded check valve with the structure of Gussman.

S/N 10/682,284

Atty Dkt No. GP-303267 (GM-0412PUS)

In any event, as discussed above with respect to the rejection under Section 102(b), Gussman, even if modified with a spring-loaded ball check valve, does not teach every element or limitation of claims 7, 12, and 19.

Claim 1 recites "a squirter connected to the engine block and having a nozzle aimed to spray lubricant against the wall of the cylinder bore slightly below the piston skirt when the piston is at top dead center." As discussed above, Gussman does not teach an oil squirter "connected to the engine block" as in claim 1 nor does, Gussman teach "a squirter... aimed to spray lubricant against the wall of the cylinder bore slightly below the piston skirt when the piston is at top dead center." as recited in claim 1.

Similarly, as discussed above with respect to the rejection of claim 9 under Section 102(b), Gussman does not teach that an oil squirter "connected to the engine block", nor "a squirter... aimed to spray a steady stream of lubricant at an angle across the cylinder bore to spray the lubricant against the wall of the cylinder bore slightly below the piston skirt when the piston is at the top dead center position", nor "a nozzle aimed to spray a steady stream of lubricant at an angle across the cylinder bore", nor "a nozzle aimed... to spray the lubricant on the wrist pin when the piston is between top dead center and bottom dead center positions", nor "a nozzle aimed... to spray the lubricant on an underside of the dome when the piston is at the bottom dead center position", all as required by claim 7.

As discussed above with respect for the rejection under Section 102(b), the method of lubricating a piston in claim 14 includes elements and limitations not taught in Gussman. Gussman does not teach "spraying the lubricant across the cylinder bore against a wall of the cylinder bore slightly below the skirt of the piston when the piston is at the top dead center position", nor "spraying lubricant onto the wrist pin... when the piston is between the top dead center and bottom dead center positions", nor "spraying the lubricant onto an underside of the dome when the piston is at the bottom dead center position" all as required by claim 14.

The simple addition of a spring-loaded ball check valve to the Gussman design would not result in the claimed invention; that is, Gussman, as modified by the Examiner, does not teach every element or limitation of claims 1, 9 and 14. As provided by Section 2143.03 of the MPEP:



S/N 10/682,284

Atty Dkt No. GP-303267 (GM-0412PUS)

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA) 1970). If an independent claim is nonobvious under 35 U.S. C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 Fx.2d 107a, 5 USPQ 2d 1596 (Fed. Cir. 1988).

Because independent claims 1, 9 and 14 are not obvious under Section 103(a), claims 7, 12 and 19 which respectively depend therefrom cannot be obvious.

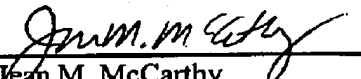
Accordingly, Applicant submits that claim 7, 12, and 19 are patentable under 35 U.S.C. §103(a) over Gussman and further in view of the prior art disclosed in the present Specification (page 3, lines 5-8), as these references do not teach every limitation of the rejected claims, there is no suggestion or motivation to combine the references relied upon by the Examiner, and one of ordinary skill in the art would not have a reasonable expectation of success in so combining. To combine the references would render Gussman unsatisfactory for its intended purpose, and result in changing the principal of operation of Gussman.

### Conclusion

This amendment is believed to be fully responsive to the Office Action mailed July 15, 2004. The remarks in support of the rejected claims are believed to place the Application in condition for allowance. Applicant prays for allowance of rejected claims 1-19.

Respectfully submitted,

**John M. Beardmore**

By   
Jean M. McCarthy  
Reg. No. 54,300

Date: 10.12.2004

S/N 10/682,284

Atty Dkt No. GP-303267 (GM-0412PUS)

QUINN LAW GROUP, PLLC  
39555 Orchard Hill Place, Ste. 245  
Novi, Michigan 48375  
Phone: 248-380-9300  
Fax: 248-380-8968

*On behalf of:*

Leslie C. Hodges  
GENERAL MOTORS CORPORATION  
Legal Staff Mail Code 482-C23-B21  
P.O. Box 300  
Detroit, Michigan 48265-3000